

Packerland Weather News



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Record Number of Tornadoes in State

By Jeff Last, Warning Coordination Meteorologist,
NWS Green Bay

An unprecedented number of violent storms hit Wisconsin in 2005. Preliminary data indicate 62 tornadoes touched down in the state this year, smashing the old record of 43 set in 1980. A single day tornado record was also set in 2005, when 27 twisters hit on August 18. The number of twisters on August 18 exceeded the average **annual** number of tornadoes by six! As of mid-October, the number of tornadoes in Wisconsin ranked in the top ten in the country for this year.

The strongest tornado in the state during 2005 was the killer storm that hit the city of Stoughton in Dane County on August 18. The tornado touched down at 6:15 pm, and did not dissipate until shortly after 7 pm. The twister was on the ground for 20 miles and was nearly one-half mile wide at times. One person was killed and 21 were injured. The storm was rated F3 on the Fujita intensity scale, with winds estimated around 200 mph.

Northeast Wisconsin was not immune from tornadoes in 2005. Twenty-three twisters were reported in the NWS Green Bay forecast area, exceeding the previous record of 16 in 1970. The average annual number of tornadoes in northeast Wisconsin is only seven.

Most of the tornadoes in northeast Wisconsin were rated "weak," with winds well under 100 mph. Most did little or no damage. Several of the tornadoes formed over Lake Winnebago as waterspouts, creating excitement for boaters, but no damage.



The August 18 Stoughton tornado (above) and its aftermath (below). Photos: Colin McDermott (above) and NWS Milwaukee/Sullivan (below).



Comments or Suggestions?

If you have any suggestions for articles or have comments about the **Packerland Weather News**, feel free to contact us at:

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Improving Marine Services

By Teri Egger, Senior Forecaster,
NWS Green Bay

Severe weather isn't the only forecast problem of the day during the summer months. The forecast staff at the NWS in Green Bay is also kept busy by providing weather information to those who venture out on Lake Michigan and the waters of Green Bay.

The marine environment provides a particularly difficult challenge to the forecaster due to the sparseness of meteorological data. Because of this, we formed a volunteer group four years ago consisting of people who use the lake for pleasure or business. Membership in this group is fluid every year, though there are a few permanent members representing the Green Bay Power and Sail Squadron, the Green Bay Metropolitan Sewage District, the U.S. Coast Guard, and the Charter Captains of Door County.

This small group of people shares with the NWS some of their insight and knowledge of the lake environment and how they use and receive our forecasts and warnings. Through this interaction, we hope to continue to improve our warnings and forecasts for all boaters of northeast Wisconsin.

The most recent Marine Users Group meeting was held in June with discussion



ranging from marine data and NOAA All-Hazards Weather Radio, to what reference points to include in our warnings. In the past, the users helped us identify sites where observational data would be most useful from the boater's perspective. This collaboration led to the establishment of two in a series of observational sites along the shoreline of northeast Wisconsin. Lakeshore sites at Algoma and Kewaunee started providing hourly weather observations this past summer.

Any frequent user of Lake Michigan or the Bay is invited to participate in future meetings. For more information, contact Teri Egger, NWS Green Bay Marine Program Leader, at teri.egger@noaa.gov.

Pat Hein Promoted to Observing Program Team Leader

By Linda S. Skowronski,
Administrative Support Assistant, NWS Green Bay

Patrick Hein was promoted to Observing Program Team Leader (OPL) at WFO Green Bay on July 24, 2005. This newly created position replaces the Data Acquisition Program Manager position vacated by the retirement of Allen LaGree.

Hein began his government career with a 4-year tour of duty with the U.S. Air Force. He joined the National Weather Service in 1974 as a Forecaster Aid at the Milwaukee County Airport. Hein transferred to the

Green Bay office in January 1979 as a Meteorological Technician. He was promoted to Hydrometeorological Technician in October 1994, a position he held until his promotion as OPL.

As OPL, Hein leads a team of three Hydrometeorological Technicians that assist in warning and forecast duties. In conjunction with the team, Hein will continue to monitor numerous observation sources including the Cooperative Observer Program (COOP), river gage stations, and Supplementary and Limited Aviation Weather Reporting Stations (SAWRS and LAWRS).

Al LaGree Retires After 31 Years of Service

By Linda S. Skowronski,

Administrative Support Assistant, NWS Green Bay

Allen LaGree, Data Acquisition Program Manager at WFO Green Bay, retired after 31 years of government service on June 11, 2005.

After a 4-year tour of duty with the U.S. Air Force, LaGree joined the National Weather Service at Sioux Falls, South Dakota as a Communicator in January 1978. He remained in the Sioux Falls office until 1981 when he was promoted to Weather Service Specialist at Columbia, Missouri. While at the Columbia office, he was promoted to Official-in-Charge, a position he held until the office closed in June 1994. LaGree transferred to the Sullivan, Wisconsin office as a Hydrometeorological Technician where he remained until accepting the Data Acquisition Program Manager position at Green Bay in October 1997.

While at WFO Green Bay, LaGree was responsible for supervising the Cooperative



Al LaGree (L) receiving a length-of-service award from Meteorologist-in-Charge Gary Austin.

Observer Network, upper air and surface weather observations, and weather/climate data management.

LaGree and his wife Mary plan to relocate to North Carolina this fall.

Winter is Fast Approaching — Are You Ready?

Winter storms are frequent visitors to the Midwest and Wisconsin. Now is the time to prepare before heavy snow, ice, and frigid cold hit. Begin by putting together a winter storm safety plan for you and your family:

- Check and winterize your vehicle before the winter season begins.
- Have a NOAA All-Hazards Weather Radio with a battery back-up to keep up-to-date on the latest weather forecast.
- Store extra food that requires no cooking, in the event electricity is cut off.
- Make sure your emergency heating source, such as a fireplace or space heater, has proper ventilation.
- Check the weather forecast before leaving for extended periods outdoors.

When traveling, carry a winter storm survival kit that includes blankets, a flashlight with extra batteries, a first-aid kit, high-calorie non-perishable food, a shovel and knife, a windshield scraper and brush, and



A winter wonderland in Elcho, Wisconsin. Photo by Greg Geiger.

booster cables. Keep your gas tank near full to avoid ice in the tank and fuel lines. If you must travel in a winter storm, avoid traveling alone.

Stay safe this winter, and enjoy the beauty of the season.



On the Web

www.weather.gov/grb/prepare

The Cooperative Observer Corner

By Patrick Hein, Observing Program Team Leader,
NWS Green Bay

I hope this newsletter finds everyone in good health and enjoying the beautiful fall weather. I'd like to say a few words about the completion of the B-91 "Your Record of Climatological Observations" form.

If no precipitation fell during your observation period, you will need to place a zero in the precipitation column. If precipitation did fall, you will need to fill in the amount along with snowfall and snow depth, if applicable. It is also helpful if you mark the precipitation columns with a straight or waved line for the hours that precipitation fell. The straight line means precipitation occurred, while the waved line means precipitation probably occurred. If any hail fell, you will need to mark its size. In addition, any other weather phenomenon that occurred that day should also be recorded. Finally, all observers should sign the B-91. This is the official record for your area and needs your verification.

Why is all of this important? The National Climatic Data Center (NCDC) in Asheville, North Carolina, archives our records and crosschecks them with other sites. Some data that is suspect or doubtful with its computer may get changed or thrown out completely. For example, if nothing is marked down in the precipitation column, it is considered missing. If you



measured rainfall with a thunderstorm and nobody else did, it may be suspect. But if you lined through the time of occurrence in the precipitation column, then you are substantiating your amount of rainfall and it will be accepted.

I know this all may seem picky, but the NCDC has a tremendous task of not only archiving data received from across the United States, but correcting or deleting any doubtful climatic data. Computers share a major role in this process. It makes our job much easier if your records are completely filled out, and leaves no doubt in anyone's mind what precipitation fell that day and how much. We appreciate the excellent job you are doing in your recordkeeping. Keep up the good work, and have a safe and happy upcoming holiday season!

 On the Web

www.weather.gov/om/coop

Brillion Observers Receive 50 Year Award

The Brillion Wastewater Treatment Plant in Calumet County received a 50 Year Institutional Award from the NWS Green Bay office on June 1, 2005. The treatment plant has been part of the NWS Cooperative Observer (COOP) Program for a half a century.

Meteorologist-in-Charge Gary Austin and Observing Program Team Leader Pat Hein presented the award to Brillion Mayor Bob Mathiebe, City Administrator Lori Gosz, and plant operators Bill Drumm and Geofrey Weinreis.



The presentation of the 50 year award to the Wastewater Treatment Plant in Brillion.

Severe Weather Season Ends With a Roar

By Roy Eckberg, Forecaster,
NWS Green Bay

Severe storms, with hurricane force winds and heavy rain, roared across central and east-central Wisconsin on September 13, ending the severe weather season on a damaging note.

The storms developed ahead of a strong cold front, which moved across Wisconsin during the afternoon of September 13. Ahead of the front, unseasonably warm temperatures in the middle to upper 80s with dew points in the 60s, made it feel more like July than September.

Showers and thunderstorms developed across southeast Minnesota and eastern Iowa and moved into western Wisconsin by early afternoon. The storms rapidly intensified as they moved into central Wisconsin, bringing gusty winds and heavy rains. Stevens Point reported 1.33 inches of rain in 45 minutes, while Plover reported nearly an inch of rain in just 30 minutes. The warm and unstable air mass caused the thunderstorms to become severe as they moved into northeast Wisconsin.

As the storms passed through Shawano and Waupaca counties, winds gusted to 50 mph at Navarino and 60 mph in New London. A swath of damaging winds associated with an evolving “bow echo” developed across Outagamie, Winnebago, and Waushara counties. In Appleton, a weather spotter reported 73 mph winds while the Outagamie County airport in Greenville clocked winds to 69 mph. Numerous trees and branches were blown down across the Appleton area—some trees as large as two feet in diameter! In Winnebago County, a billboard blew onto Highway 41. Close to 50,000 people were without power in the Fox Valley. Trees and branches were down across Waushara County as well.

As the severe storms raced northeast across Brown County, winds gusted to 54 mph in Green Bay, 65 mph in Wrightstown, and 68 mph in Bellevue. At the Green Bay Light on the southern end of the waters of Green Bay, winds were clocked to 63 mph



A storage building was knocked down by winds over 70 mph near Freedom in Outagamie County.

before the instrument failed. Widespread damage to trees and power lines were reported across the county. The city of De Pere and the village of Allouez, just east of Green Bay, were particularly hard hit, as numerous trees and power lines went down. The NWS Green Bay office sent out a storm team to investigate the damage and concluded that a brief tornado touched down in De Pere and moved north-northeast to just north of Heritage Hill State Park in Allouez. The tornado was rated F0 with winds around 70 mph.

The storm system continued east and produced wind damage to trees and power lines across Calumet, Door, Kewaunee, and Manitowoc counties. A wind gust of 76 mph was measured in Sherwood and 65 mph was clocked at Darboy in Calumet County. In Kewaunee County, trees were reported down and winds were estimated at 60 mph north of Casco. Wind damage was also reported several miles southwest of Norman in Manitowoc County. Trees and power lines were knocked down in Sturgeon Bay.

No injuries were reported from the storms, but damage across the Fox Valley exceeded \$1.2 million.

Tomahawk Hydro Dam Exercise Conducted

By Thomas Helman, Senior Forecaster,
NWS Green Bay

Due to the elevation change over northern Wisconsin and parts of central Wisconsin, several hundred dams have been built on area rivers. With the volume of water available, the larger dams tend to be located along or near the Menominee, Fox, and Wisconsin Rivers. If one of these dams should fail, the impact to life and/or property could be tragic. As a result, about once every five years, an owner of a particular dam will organize a dam exercise with the assistance of the Federal Energy Regulatory Commission (FERC). The dam exercise consists of a tabletop meeting and then a functional exercise meeting.

On May 19, 2005, a functional exercise for the Tomahawk Hydro Dam on the Wisconsin River was held in Tomahawk. Twenty-eight people attended, including representatives from FERC, the Tomahawk and Merrill Police Departments, Lincoln and Vilas County Emergency Management and Sheriff Departments, Wisconsin Public Service, and the National Weather Service.

The purpose of a functional exercise is to test all agencies with duties and responsibilities in the event of a dam failure. Conducted in a real-time environment, the exercise begins with a description of the situation or scenario. This scenario describes what is happening at the dam, and may also include other non-dam related events which



Lincoln County Emergency Manager Brian Sladek (L) and Vilas County Emergency Manager Jim Galloway coordinating during the dam exercise.

could impact the scenario. After the scenario is read, needed participants are called or notified using the Notification Call List. Notification Call Lists are in all Emergency Action Plans (EAPs). For the rest of the exercise, coordination between agencies continues in setting up road blocks, shelters, rescues, and whatever else is needed during the dam break scenario. A record is maintained detailing what action was taken.

After the exercise, several evaluators go over the event with the participants to recommend any improvement. By conducting these exercises now, agencies can be better prepared in the event of a dam failure.

Storm Spotters: It's Time to Get Out the Snow Rulers

Before you know it, winter will be here, and the snow will be flying. Your accurate snowfall measurements are essential to the National Weather Service forecast and warning program.

It is important to measure snowfall (and snow depth) in locations where the effects of blowing and drifting are minimized. Finding a good location where snow accumulates uniformly simplifies all other aspects of the observation and reduces the opportunities for error. In open areas where wind-blown snow cannot be avoided, several

measurements will be necessary to obtain an average depth—these measurements should not include the largest drifts. In heavily forested locations, find an exposed clearing in the trees. Measurements beneath trees are inaccurate since large amounts of snow can accumulate on trees and never reach the ground.

Snowfall should be reported in tenths of an inch (for example, 3.9 inches). Official spotters can call in their reports to the NWS using the toll-free hotline or send them via the internet using eSpotter.

Green Bay Office Leads NWS Participation in Experiment

The NWS Green Bay office is taking the lead in the TAMDAR (Tropospheric Airborne Meteorological Data Report) "Great Lakes Fleet Experiment," which started in January 2005. The project consists of evaluating weather instruments installed on commuter aircraft that serve airports across the Great Lakes and surrounding areas of the central and eastern U.S. The TAMDAR instrument package measures temperature, humidity, wind, pressure, icing and turbulence, and reports the data in real time to the National Weather Service.

Weather forecasts are largely dependent on ground and upper air weather data. While there are thousands of ground weather observations taken across the continental U.S. every hour, there are only about 70 locations where weather balloons take measurements above the ground, just twice each day. Observations from aircraft will help fill gaps in the upper air observation network. Early results indicate that the new source of upper air weather data is helping meteorologists evaluate weather conditions that lead to severe weather.

This project is a collaboration of several government and private agencies, including the National Aeronautics and Space Administration (NASA). NASA recently presented the NWS Green Bay office and staff members Rich Mamrosh, Gene Brusky, and Jeff Last with awards for their support of TAMDAR.



NWS Green Bay's Scott Cultice readies a weather balloon during a TAMDAR data quality study in Memphis, TN.



Clockwise, starting upper left: Gary Austin, Gene Brusky, Jeff Last, and Rich Mamrosh with awards from NASA.

Local Company Receives NWS Award

Schneider National Inc. of Green Bay received the Mark Trail Award from the NWS during a May 26, 2005, ceremony in Washington, D.C. Schneider was honored for its long-standing use of radios equipped with NOAA All-Hazards Weather Radio (NWR) receivers in its fleet of 15,000 long-haul trucks.

During the ceremony, the NWS recognized 17 individuals, government and non-government organizations and corporations at the Mark Trail Awards. These Awards

are presented for noteworthy gifts, community or organization action, and individual or group response to a warning.

Mark Trail, the syndicated comic strip published in newspapers across the country, has been the official spokesman for NWR since 1997. Jack Elrod, the creator, writer, and illustrator of Mark Trail, began taking an active interest in NWR in 1995 and developed Sunday feature cartoons to illustrate its use to mitigate severe and hazardous weather threats.

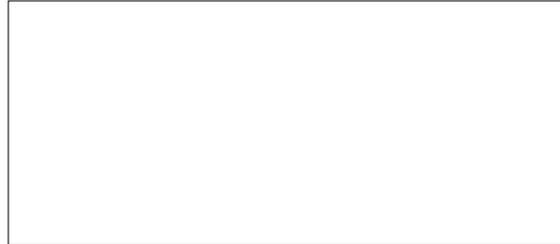
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